In the claims:

1. **(Currently Amended)** A method of characterizing a first molecule X and a second immobilized molecule Y in a sample of a conducting medium, said method comprising:

   (a) providing a system comprising said immobilized second molecule Y, said conducting medium sample, and said first molecule X;

   (b) detecting a transient electrical signal giving rise to a decaying waveform that is produced by a monodirectional movement of said first molecule X through said conducting medium sample relative to said immobilized second molecule Y; and

   (c) relating said detected transient electrical signal to at least one characterizing feature of said first molecule X and said second molecule Y in said sample.

2. (Original) The method according to Claim 1, wherein said at least one characterizing feature is motion, velocity, quantity, structure, charge or binding event.

3. (Original) The method according to Claim 1, wherein said movement is a movement of X toward Y.

4. (Original) The method according to Claim 1, wherein said movement is a movement of X away from Y.

5. (Original) The method according to Claim 1, wherein said conducting medium sample is a fluid medium.

6. (Original) The method according to Claim 1, wherein said conducting medium sample is a gel or gaseous medium.

7. (Original) The method according to Claim 1, wherein said immobilized molecule Y is a polymer.

8. (Original) The method according to Claim 7, wherein said polymer is a polypeptide.

9. (Original) The method according to Claim 7, wherein said polymer is a nucleic acid.

10. (Original) The method according to Claim 1, wherein said immobilized second molecule Y is immobilized on a surface of a first working electrode.

11. (Original) The method according to Claim 10, wherein said transient electrical signal is measured using said first working electrode and a second reference electrode.

12. (Original) The method according to Claim 10, wherein said transient electrical signal is measured using a plurality of electrodes, which plurality includes said first working electrode.

13. (Original) The method according to Claim 1, wherein said transient electrical signal is a change in an electrical parameter over time.

14. (Original) The method according to Claim 13, wherein said electrical parameter is voltage.

15. (Original) The method according to Claim 13, wherein said electrical parameter is current.

16. (Original)The method according to Claim 13, wherein said electrical parameter is accumulated charge.

17. **(Currently Amended)** The method according to Claim 13, wherein said electrical parameter ~~is~~ includes impedance.

18-112.(Cancelled)

113. **(Currently Amended)** A method according to Claim 1, wherein said second immobilized molecule Y is a polymer immobilized on a surface of a working electrode, said conducting medium sample is fluid medium; said transient electrical signal is voltage that is measured using said first working electrode and a second reference electrode; said movement is a movement of X towards Y; and said at least one characterizing feature is a binding event between X and Y.

114. **(Currently Amended)** The method according to Claim ~~114~~113, wherein said immobilized polymer is a polypeptide.

115. **(Currently Amended)** The method according to Claim ~~115~~114, wherein said first molecule X is a polypeptide.

116. **(Currently Amended)** The method according to Claim ~~114~~113, wherein X and Y are proteins.

117. **(Currently Amended)** The method according to Claim ~~117~~116, wherein X and Y are receptor-ligand pair.

118. **(Currently Amended)** The method according to Claim ~~117~~116, wherein X and Y are an antibody-antigen pair.

119. **(Currently Amended)** The method according to Claim ~~114~~113, wherein said immobilized polymer is a nucleic acid.

120. **(Currently Amended)** The method according to Claim ~~120~~119, wherein said first molecule X is a nucleic acid.

121. **(Currently Amended)** The method according to Claim ~~120~~119, wherein said method is a method of detecting a nucleic acid analyte in a sample.

122. **(Currently Amended)** The method according to Claim ~~122~~121, wherein said nucleic acid analyte comprises a SNP.

123. **(Currently Amended)** The method according to Claim ~~122~~121, wherein said method quantitatively determines the amount of said nucleic acid analyte in said sample.

124. **(Currently Amended)** The method according to Claim ~~124~~123, wherein said method is a method of gene expression profiling.

125. **(New)** A method of detecting the occurrence of a binding event between a first molecule and an immobilized second molecule in a medium, said method comprising:

(a) providing a system comprising said immobilized second molecule immobilized on a surface of a working electrode and in contact with a medium comprising said first molecule;

(b) detecting a transient electrical voltage giving rise to a decaying waveform in said medium that is produced by a binding event between said first molecule and said immobilized second molecule; and

(c) relating said detected transient electrical voltage to the occurrence of said binding event between said first and second molecule.

126. **(New)** The method according to Claim 125, wherein said first and second molecules are proteins.

127. **(New)** The method according to Claim 125, wherein said first and second molecules are a receptor-ligand pair.

128. **(New)** The method according to Claim 125, wherein said first and second molecules are an antibody-antigen pair.

129. **(New)** The method according to Claim 125, wherein said first and second molecules are nucleic acids.

130. **(New)** The method of claim 1, wherein the transient electrical signal is voltage giving rise to a waveform that decays in 1 minute to 1 millisecond.

131. **(New)** The method of claim 130, wherein the waveform decays in 5 seconds to 10 milliseconds.

132. **(New)** The method of claim 125, wherein the transient electrical voltage gives rise to a waveform that decays in 1 minute to 1 millisecond.

133. **(New)** The method of claim 132, wherein the waveform decays in 5 seconds to 10 milliseconds.